

## Claims

What is claimed is:

1. A filterless air purifying and vacuum cleaning device and process comprising:  
a powered impeller with multiple paddles or vanes for substantially atomizing fluid droplets simultaneously with transferring air;
2. A filterless air purifying and vacuum cleaning device and process using an inlet tube or pipe for conveyance of air into the impeller;
3. A filterless air purifying and vacuum cleaning device and process using a tube with an orifice to introduce fluid into the impeller;
4. A filterless air purifying and vacuum cleaning device and process using an impeller with flat paddles or vanes, with enclosed sides to contain, control and direct fluid flow,
5. A filterless air purifying and vacuum cleaning device and process using an impaction means to splatter atomized droplets from an impeller to an anvil substantially reducing them to smaller droplets;
6. A filterless air purifying and vacuum cleaning device and process using an impeller housing with multiple narrowed low pressure zones to reduce fluid surface tension whereby dry particles become substantially wetted and discharged;
7. A filterless air purifying and vacuum cleaning device and process using a high pressure air/fluid demisting chamber for droplet re-entrainment, containing an air inlet, an air outlet and a fluid drain with a means of

containing and operating said impeller and housing inside said demisting chamber;

8. A filterless air purifying and vacuum cleaning device and process using a drain means for continuously discharging particle laden fluids, eliminating the need for water baths, filters or collection plates; and
9. A filterless air purifying and vacuum cleaning device and process using a means of attaching a central vacuum network to an air purification device to be used for either wet or dry cleaning of carpets and furnishings,
10. A filterless air purifying and vacuum cleaning device and process using a vacuum head with a screen to trap large objects, allowing small particles to pass into said suction means of said air purification device and process.
11. A filterless air purifying and vacuum cleaning device and process whereby a combination of known and public domain technologies are employed together and in concert to accomplish said device and process.

#### Abstract of the Disclosure

A machine and process for filterless, non-ionizing, wet removal of particles from ambient air comprised of a suction inlet pipe or other contained conveyance for introducing particle laden air and solvent fluid to an impeller, an injection orifice for introducing water or other solvent into the suction, an impeller for atomizing fluid droplets, an impaction anvil to splatter atomized droplets into smaller droplets, an impeller housing configured to create multi-staged low pressure venturi zones to reduce surface tension and enhance entrainment of particles with fluid, a method of causing all

dry particles to collide with solvent droplets, an apparatus of operating an impeller inside a high pressure demister and a method of discharging particle laden fluid down a drain and cleaned air back into the original air space.